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What is claimed is
Patent Claims

1. An optical arrangement in the illumination beam path of a microscope, in particular of a confocal laser microscope, **characterized by** an illumination optical system, arranged in the illumination beam path, to modify the illumination diameter.
2. The arrangement as defined in Claim 1, **wherein** the illumination optical system is embodied as an arrangement of replaceable fixed optics.
3. The arrangement as defined in Claim 1, **wherein** the illumination optical system comprises a variable optical system, preferably operating steplessly.
4. The arrangement as defined in Claim 3, **wherein** the variable optical system is a preferably motorized zoom optical system.
5. The arrangement as defined in Claim 4, **wherein** the zoom optical system is a zoom optical system usual in video cameras.
6. The arrangement as defined in one of Claims 1 through 5, **wherein** the modification in the illumination diameter is matched to the entry pupils of predefined objectives, preferably arranged in a revolving nosepiece, and preferably is accomplished automatically.
7. The arrangement as defined in one of Claims 2 through 6, **wherein** the illumination optical system is arranged downstream from a point light source or an optical fiber (3).

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8. The arrangement as defined in one of Claims 2 through 7, **wherein** the illumination optical system is embodied as a parallelizing optical system with a fixed focal intercept but variable focal length, the beam diameter being adaptable to the entry pupil of the objective.
9. The arrangement as defined in one of Claims 2 through 6, **wherein** the illumination optical system is embodied as an expanding optical system for a preferably directly coupled-in laser beam.
10. The arrangement as defined in Claim 9, **wherein** the beam is variably expandable in accordance with the ratio f_1/f_2 of the focal lengths.
11. The arrangement as defined in one of Claims 2 through 10, **wherein** the illumination optical system comprises a further optical component that influences or favors edge illumination in particular with large entry pupils for the objective.
12. The arrangement as defined in Claim 11, **wherein** the further optical component is embodied as an additional lens.
13. The arrangement as defined in Claim 11, **wherein** the further optical component is embodied as an annular stop.
14. The arrangement as defined in Claim 11, **wherein** the further optical component is embodied as a holographically generated optical element.

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15. The arrangement as defined in one of Claims 1 through 14, **wherein** a further light source, preferably a laser light beam, can be coupled in via an additional input, and is adaptable to the entry pupil of the objective with no adaptation of the actual illumination beam path.

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16. The use of an arrangement as defined in one of Claims 1 through 15 in multiphoton laser scanning microscopy.

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